

configured to radiate with greater field intensity over an area of less than 360 degrees of arc;

5 a transmitter amplifier coupled to the antenna, the transmitter amplifier having an output impedance that matches the impedance of the antenna, the impedance of the antenna determined by performing a finite element analysis on a design of the antenna to determine an estimated output impedance, and adjusting the antenna if the estimated output impedance does not approximately match the transmitter amplifier output impedance; and

10 wherein the antenna is oriented such that the area of less than 360 degrees of arc is in the direction away from a head of a user of the hand-held wireless communications device.

2. The system of claim 1 wherein the antenna is a patch antenna that is provided so as to filter the radiated signal by radiating the radiated signal within a narrow, predetermined band.

3. The system of claim 1 wherein the antenna is a patch antenna that is configured to radiate with greater field intensity over an area of less than 360 degrees of arc.

4. The system of claim 1 wherein the antenna is a loop antenna that is configured to radiate with greater field intensity over an area of 180 degrees of arc.

5. The system of claim 1 further comprising a receive antenna coupled to the hand-held wireless communications device, wherein the receive antenna has an orthogonal field of reception relative to the antenna.

6. The system of claim 1 further comprising a receive antenna coupled to the hand-held wireless communications device, wherein the receive antenna is a patch antenna.

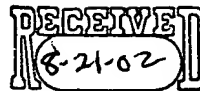
8. A system for wireless communications comprising:

a hand-held wireless communications device;

a transmit antenna coupled to the hand-held wireless communications device;

a transmitter amplifier coupled to the transmit antenna, the transmitter amplifier having

5 an output impedance that matches an impedance of the transmit antenna, the impedance of the



transmit antenna determined by performing a finite element analysis on a design of the transmit antenna to determine an estimated output impedance, and adjusting the area of the transmit antenna if the estimated output impedance does not approximately match the transmitter amplifier output impedance; and

10 a receive antenna coupled to the wireless communications device.

9. The system of claim 8 wherein the hand-held wireless communications device is a cellular telephone.

10. The system of claim 8 wherein the transmit antenna has a transmit field that is orthogonal to the reception field of the receive antenna.

11. The system of claim 8 wherein the transmit antenna and the receive antenna are each patch antennas, and are each contained within a housing of the hand-held wireless communications device.

12. The system of claim 8 wherein the transmit antenna and the receive antenna are each patch antennas, and are each contained within an integrated circuit package.

22. A method for wireless communications comprising:

modulating speech data onto an electromagnetic signal;

transmitting the electromagnetic signal from a handheld device having an antenna that transmits with a greater field intensity over an area of less than 360 degrees of arc in a direction

5 away from a head of a user; and

wherein the antenna has an impedance that matches an output impedance of a transmitter amplifier of the handheld device, the impedance determined by performing a finite element analysis on a design of the antenna to determine an estimated output impedance, and adjusting the antenna if the estimated output impedance does not approximately match the transmitter amplifier output

10 impedance.

23. The method of claim 22 further comprising receiving an incoming electromagnetic signal at a second antenna.

24. The method of claim 22 wherein transmitting the electromagnetic signal from the handheld device having the antenna that transmits in the direction away from the head of the user further comprises transmitting the electromagnetic signal from a patch antenna.

25. The method of claim 22 further comprising receiving an incoming electromagnetic signal at a patch antenna.

26. The method of claim 22 further comprising receiving an incoming electromagnetic signal at a monopole antenna.

27. A method for wireless communications comprising:
determining the output impedance of a transmitter amplifier of a wireless device;
performing a finite element analysis on a design of a patch antenna to determine an estimated output impedance;
5 adjusting the area of the patch antenna if the estimated output impedance does not approximately match the transmitter amplifier output impedance; and
providing the patch antenna for use with the wireless device.

28. The method of claim 27 wherein the output impedance of the transmitter amplifier is approximately 10 ohms.

30. The method of claim 27 further comprising adjusting the pass band characteristic of the patch antenna to reduce the need for filtering of a received signal having predetermined frequency characteristics.

31. (NEW) The system of claim 1 further comprising at least two base stations, wherein the hand-held wireless communications device communicates with one of the base stations when it is oriented in a first direction and with the other of the base stations when it is